



Sharing your passion for making jewelry.
Products. Service. Know-how.

Rio Tilt-Pour Automatic Melting Furnace

The Rio Tilt-Pour Automatic Melting Furnace is designed to provide a safe, easy-to-use electrical method for melting gold, silver and other non-ferrous metals for casting and ingot-pouring applications. It offers precise control of melting temperatures up to 2028°F (1120°C) through its user-friendly, programmable controller with LED display. The insulated lid holds in heat and keeps oxygen out for a cleaner melt. Operates on 110 volt; 50/60Hz.

	Melting capacities	Electrical specifications
1kg model:	14K gold: 821g (26.4 troy oz.)	850 watts; 13 amps
3kg model:	14K gold: 2799g (90 troy oz.)	1700 watts; 15 amps



Setting Up the Furnace

Unpack the shipping box and check to make sure your Automatic Melting Furnace includes a crucible, a pair of crucible tongs, power cord and instruction manual.

Inspect the unit and accessories in case any damage has occurred during shipping (contact Rio Grande immediately with any shipment issues). Make sure the inside of the heating chamber is free of any debris. If there is a piece of wood or styrofoam between the control housing and heating chamber, remove it before operation.

Please Note: We recommend that you keep the carton and packaging material to reuse in the event the furnace must be returned for repair or servicing.

If you haven't done so already, choose an appropriate working site for the furnace. Make sure the top of your working surface is composed of metal, ceramic, slate or any other surface that will not support a fire in case of a molten metal spill.

Warning! Allow at least 16 inches of space between the furnace and any surrounding combustible surfaces or items. Heat emitted from the furnace requires at least this much open space to dissipate in order to avoid possible fire hazard.

Warning! Do not use this furnace in the same area with flammable or combustible materials as the furnace may ignite these materials.

Notice The furnace should be used only in a well-ventilated area as some alloys release fumes that can create health risks. Follow all local and federal regulations for proper ventilation procedures.

After setting up your furnace in a work area that meets the above safety criteria, check to be sure the front power switch is in the OFF position before plugging the furnace into a properly grounded 110–120 volt outlet.

Warning! To avoid electrical shock, the furnace must always be used with a properly grounded outlet and with the correct voltage and electrical current handling capacity.

Notice In the event you need to replace the electrical system's fuse, always use the correctly rated fuse. For the 3kg model, use a 20-amp fuse; for the 1kg model, use a 15-amp fuse.

Operational Safety

Your Rio Tilt-Pour Automatic Melting Furnace is designed to provide safe and efficient operation. Due to the extremely high heat and molten metal involved in this process, a high degree of caution and care are critical to ensure its safe use. Please note the following precautions before you proceed with operation of this furnace.

⚠ Warning! Always use appropriate safety equipment, including safety glasses, appropriate heat-resistant gloves, a fireproof apron and leather-toed shoes (or equivalent) when using this furnace. Molten metal can cause serious injury if not handled properly and carefully.

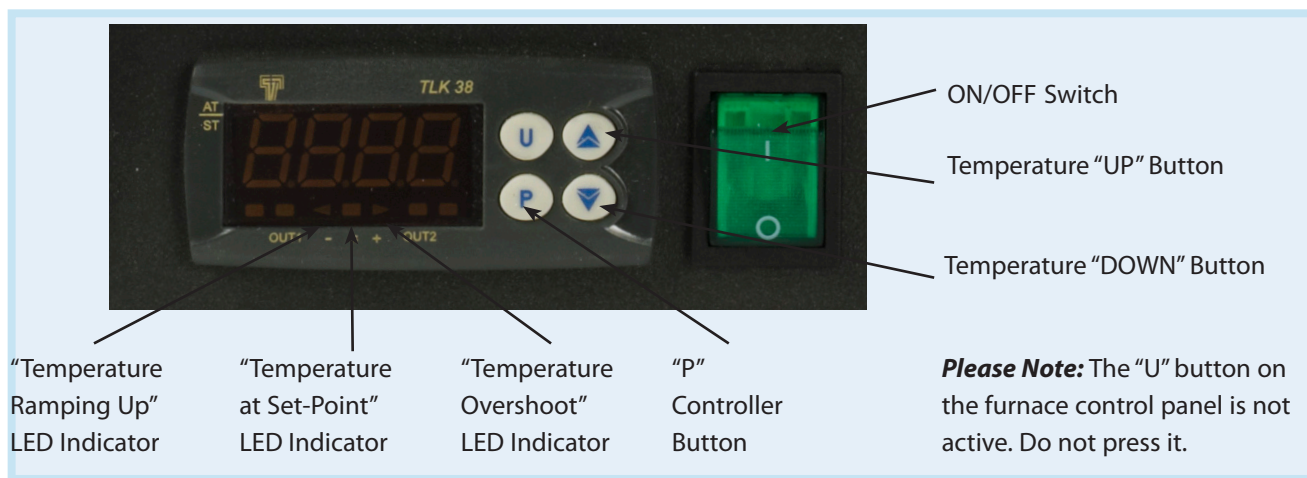
⚠ Warning! Keep hands, hair and clothing away from the melting chamber while it is hot. Do not let moisture drip into the molten metal—a violent reaction may occur. Do not touch the furnace while it is in use or until a sufficient cooling time has passed (2–3 hours after unit has been turned off). The furnace generates high temperatures that can cause severe burns or a fire.

Notice: Inspect your crucible for cracks, wear and deterioration prior to every use. Due to high heat, some of the crucible material will naturally slough off over time and the walls and base will gradually become thinner. This may result in leaking which can cause element and thermocouple failure.

Notice: Do not set the furnace temperature high enough to grossly exceed the melting point of the metal you are loading. This could cause boiling and vaporization of the metal resulting in damaging contamination and failure of the heating element.

Operating the Furnace

Before using your furnace, review the control panel descriptions below and become familiar with its operation.



Setting the Melt Temperature and Handling the Melt



Please Note: This unit is pre-set to Fahrenheit (°F).

1. Remove the crucible and clean the inside with a hard paper towel to remove loose graphite or other debris. Close the lid and turn the furnace on. The letters "tEst" will appear on the LED display and the unit will perform a self-test. Once the test is complete, the current temperature of the heating chamber will appear.
2. Push the "P" button once to program the set-point temperature. The letters "SP 1" will appear. You can now adjust the set-point temperature to your desired temperature by using the "UP" and "DOWN" keys. Holding a key down for a few seconds allows you to change the temperature setting more rapidly. When the set-point temperature is correct, push the "P" button again to save it.

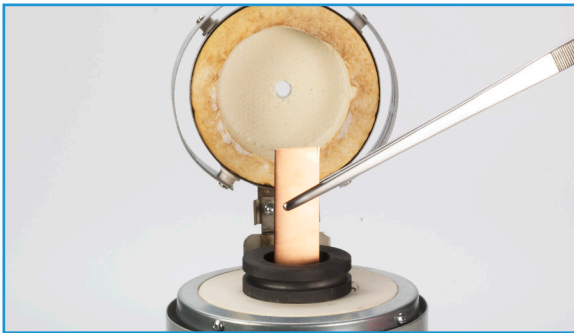


- Once the temperature set-point is saved, the furnace will quickly begin to ramp up to that temperature and the red LED “ramping up” arrow displays. The ramp-up time for the 3kg model to reach 1950°F is around 20 minutes; this time will vary depending upon the temperature chosen and the amount and type of metal in the furnace. When the set-point temperature is achieved, the square green LED will come on. The red LED “overshoot” arrow will appear next, indicating the furnace has gone slightly beyond the set-point. The LEDs will alternate off and on as the furnace self-adjusts to the set-point. Please Note: It is normal for the temperature to fluctuate slightly above and below the set-point.



- Using the tongs included with the furnace, grasp the crucible around the grooves in its upper sleeve (as shown). Carefully lower the crucible into the heating chamber and close the lid.

Warning! At this time, the heating chamber is extremely hot. Use caution and always wear heat-resistant gloves when performing any operation near the heating chamber. The temperature shown on the display will ramp down slightly when you first add the crucible. It will return to your set-point temperature after a few minutes.



- Beginning with small pieces, slowly add metal to the crucible—fill the crucible only to $\frac{1}{4}$ – $\frac{1}{3}$ of its capacity at first. Once that is melted, add more metal until you have the amount needed for your casting.

Warning! Use caster’s tweezers to handle the metal pieces. Do not drop larger, heavier pieces into the crucible as the shock could fracture it.

Please Note: We recommend using separate crucibles for different metals to avoid cross-contamination.



- When you have fully charged the crucible with metal and the temperature is slightly below set-point, stir the metal with an appropriate stirring rod (sold separately, see back page). After the metal has reached casting temperature, open the lid fully to lock it in position.



- Grasp the handles at the back and side of the furnace, keeping your thumb on the lid tab to secure it. Pour smoothly and quickly into your mold; the metal will immediately begin to cool. If casting multiple flasks, repeat as needed.

⚠ **Warning!** Never tilt the furnace more than 90°; the crucible can slide out of the furnace spilling hot metal.

⚠ **Warning!** Always wear appropriate heat-resistant safety gloves (such as the Kevlar® gloves) whenever you are handling a hot crucible.

8. When you are finished melting, turn off the power switch, close the lid over the heating chamber and unplug the unit (to avoid accidental activation). Place the hot crucible in an inert environment (such as the crucible cooling jar sold below) to help slow graphite deterioration caused by exposure to oxygen. If you don't have an inert environment, put the crucible inside the unit to cool.



Replacement Parts & Accessories

Description

Replacement graphite crucible (grooved), 1kg
 Replacement graphite crucible (grooved), 2kg
 Replacement graphite crucible (grooved), 3kg
 Replacement tongs

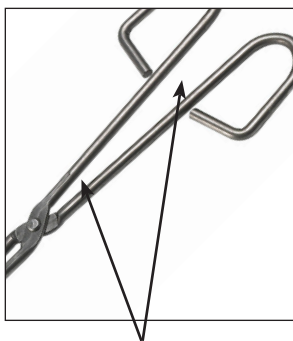
Description

Stirring rod, 7" (pkg/10)
 Holder for stirring rod
 Tweezers, 18" L
 Kevlar® safety gloves
 Crucible cooling jar

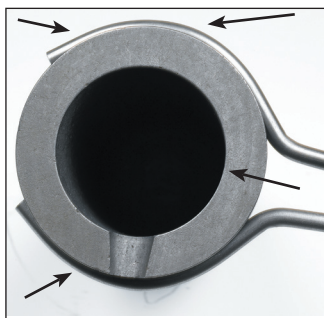
Crucible Tongs & Safety

The Rio Tilt-Pour is specially designed to allow you to pour molten metal without having to lift the crucible from the furnace; however, if you decide to lift the crucible to pour your metal, the quality of your tongs is critical to safely doing so. Poorly designed tongs are frequently the cause of spills and potentially dangerous accidents when picking up and pouring molten metal from a crucible. The tongs provided with your Rio Automatic Melt Furnace are far superior to many others found in the marketplace. They have been tested extensively and proven to be safe and effective at handling high-temperature crucible melts time and again.

Rio-Tested Crucible Tongs (as supplied)

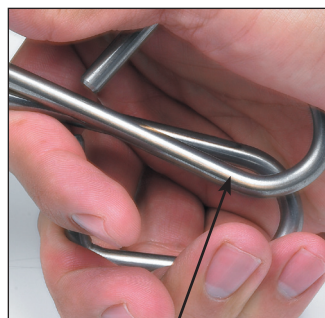


The handles on Rio tongs cannot cross over one another. Your grip remains constant and dependable as you lift and pour the crucible. They are also made from thicker gauge (6mm) metal.



Rio tongs make full contact all the way around the crucible sleeve for a secure, confident grip when lifting and pouring.

Poorly Designed Crucible Tongs



The handles on many tongs can cross over each other as you close them. This can cause an instantaneous loss of gripping pressure and uncontrolled spilling. They are also made from thin gauge (typically 5mm) metal.



The poor design of these tongs leaves gaps in its contact area with the crucible sleeve, creating an incomplete and a dangerously unsecured hold on the hot crucible.

If the tongs supplied with this Rio furnace become worn or need to be replaced, we recommend purchasing the replacement tongs designed for the Rio furnace. See the parts list on the back page; visit our website or check your *Rio Grande tools & Equipment* catalog to order.

©2012 The Bell Group, Inc. All rights reserved.